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To: WRSP(2)  
From: R-W  
Info: Headquarters ✓  
Re: System 3

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PAGE: 1 OF 1

Some of the early schematics of the second local oscillator board in System 3 show the biasing and return circuits of the scale-of-3 counter as follows:

- R796, Open - no return
- R803, Return to -130 volts
- R809, Return to +130 volts

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It was discovered that the scale-of-3 counter would occasionally malfunction by assuming a fourth stable state in which all three transistors were conducting. An input pulse at this time would not shift the state of the scale-of-3 counter. To overcome this possibility, dissymmetry in the biasing was added as follows:

- R796, Still open
- R803, Return to ground
- R809, Open

Our records indicate that all systems were modified accordingly.

Recently we have received a number of customer rework boards for repair. On the 04 boards we noticed a 400 cycle signal of about 30 millivolts in amplitude on the scale-of-3 gate. After considerable hunting around, we found the trouble to be a poor ground condition between the heat sink and the etching ground on the board. The only ground between these two points is made by the screws which secure the board to the heat sink. The tightening of these screws in all cases corrected the malfunction. Similar situations have been encountered on the 05 boards.

The heavy base plate casting housing the principal mechanical portions of the System 4 and System 5 14-channel recorder is attached to the main frame with Allen head screws that float on rubber grommets inserted between the casting and the frame. These screws have a tendency to work loose during flight. Replacement screws with a self-locking thread are being shipped as replacement parts. The suggested procedure would be to replace one screw at a time and tighten to remove looseness without compressing the rubber grommet.

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